

Appln. No.: 10/619,115
Amendment Dated June 1, 2006
Reply to Office Action of March 6, 2006

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Remarks/Arguments:

Claims 2 and 7 - 26 are pending. Claims 7, 13, 18, 21 and 24 have been amended. No new matter is introduced herein. Support for the amendment of claims 7 and 18 can be found, for example, paragraph [0040] and Figs. 2, 4 and 5. Support for the amendment of claims 13 and 21 can be found for example, paragraph [0055] and Fig. 8. Support for the amendment of claim 24 can be found, for example, paragraph [0065] and Figs. 10A and 10B

Claims 2, 7 - 12, 18 - 20 and 24 - 26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Zairi et al. (U.S. Pat. App. Pub. No. 2003/0108304) in view of Koh et al. (U.S. Pat. No. 6,628,854).

It is respectfully submitted that this ground for rejection is now overcome for the reasons set forth below:

In particular, neither Zairi et al., Koh et al. nor their combination disclose or suggest:

"...a substrate having an optical component mount aperture formed therein... the optical component mount aperture is configured to receive an optical component therein... whereby the optical component is mounted to a base that is separate from the substrate..." as required by claim 7.

Zairi et al. disclose, in Fig. 7A, an optical connection module that includes a substrate 92 and a thermally insulating material 94 integrated into the substrate. Zairi et al. disclose fabricating laser 95 directly on the substrate or attaching the laser using a bonding region (Paragraph [0036]). Zairi et al. do not disclose or suggest "a substrate having an optical component mount aperture formed therein," "the optical component mount aperture is configured to receive a optical component therein" or "the optical component is mounted to a base that is separate from the substrate" as required by Claim 7. Zairi et al. do not disclose nor suggest that the substrate has a component mount aperture that is configured to receive an optical component mounted in the fiber mount region. Thus, Zairi et al. cannot disclose or suggest that the optical component is mounted to a base that is separate from the substrate.

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Koh et al. disclose an optical transceiver module. As shown in Figs. 2 and 4, a silicon bench 6 includes U-shaped recesses 7a, 8a, 9a and 10a to receive a variety of optical devices (Col. 4, line 6 - 10). Koh et al. do not disclose or suggest "a substrate having an optical component mount aperture formed therein," "the optical component mount aperture is configured to receive an optical component therein" or that "the optical component is mounted to a base that is separate from the substrate" (emphasis added). This feature is neither disclosed or suggested by Koh et al. Koh et al., instead, disclose that the silicone bench includes recesses to receive optical devices. The recesses of Koh et al. do not allow the optical component to be mounted to a base that is separate from the substrate. Thus, Koh et al. do not include all of the features of claim 7.

Accordingly, neither Zairi et al., Koh et al., nor their combination disclose nor suggest applicant's features as required by claim 7 and is not subject to rejection under 35 U.S.C. 103(a) as being unpatentable over Zairi et al. in view of Koh et al. Because claims 2 and 8 - 12 depend from claim 7, they are also not subject to rejection under 35 U.S.C. 103(a) as being unpatentable over Zairi et al. in view of Koh et al.

Amended claim 18 includes limitations similar to the limitations of claim 7 that are neither disclosed nor suggested by Zairi et al. or Koh et al. Namely: forming an optical component mountable aperture on a surface of the substrate and placing an optical component within an area defined by the optical component mountable aperture such that the optical component is mounted to a base that is separate from the substrate. As described above, neither Zairi et al. nor Koh et al. include all of these features. Thus, Zairi et al. and Koh et al. either alone or in combination, do not disclose all of the features of claim 18.

Accordingly, claim 18 is not subject to rejection under 35 U.S.C. 103(a) as being unpatentable over Zairi et al. in view of Koh et al. Because claims 19 and 20 include all of the features of claim 18 from which they depend, claims 19 and 20 are also not subject to rejection under 35 U.S.C. 103(a) as being unpatentable over Zairi et al. in view of Koh et al.

Amended claim 24 includes limitations similar to the limitations of claim 7 that are neither disclosed nor suggested by Zairi et al. or Koh et al. Namely, a low thermal conductivity substrate having an aperture formed therein and an unpackaged optical component mounted on

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a base in the aperture. As described above, neither Zairi et al., Koh et al. nor their combination include all of these features.

Accordingly, claim 24 is not subject to rejection under 35 U.S.C. 103(a) as being unpatentable over Zairi et al. in view of Koh et al. Because claims 25 and 26 include all of the features of claim 24 from which they depend, claims 25 and 26 are also not subject to rejection under 35 U.S.C. 103(a) as being unpatentable over Zairi et al. in view of Koh et al.

Claims 13 - 17 were rejected under 35 U.S.C. 103(a) as being unpatentable over Zairi et al. in view of Tada (U.S. Pat. No. 5,684,902). The ground for rejection of claim 13 is overcome. In particular, neither Zairi et al., Tada nor their combination disclose or suggest:

"...a substrate formed from a semiconductor of a first conductivity type and having ...a substantially planar fiber mount region formed directly on the substrate...

...an optical output coupler formed on a surface of the active layer to provide radiation emitted from the active layer..." as required by claim 13.

Zairi et al. is described above. Zairi et al. disclose that a fiber bonding pad 96 is provided on thermally insulating material 94 that is integrated directly into substrate 92 (paragraph [0036]). Zairi et al. do not disclose or suggest applicant's features of "a substantially planar fiber mount region formed directly on the substrate" or "an optical output coupler formed on a surface of the active layer" (emphasis added). Zairi et al. further do not disclose or suggest a laser comprising an active layer, a semiconductor layer and an electrode layer as required by claim 13. Zairi et al. is silent on forming a substantially planar fiber mount region directly on the substrate. Furthermore, Zairi et al. is silent on forming an optical output coupler on a surface of an active layer of a laser. Thus, Zairi et al. do not disclose all of the features of claim 13.

Tada discloses, in Figures 1 and 2(f), a semiconductor laser module including a laser chip 3 disposed on a substrate 1. An optical fiber 6 is disposed in a V-shaped groove 2 of the substrate. The laser chip 3 has an overhanging part 4 such that cladding part 61 of optical fiber 6 contacts the overhanging part 4 (Col. 5, lines 7 - 18). Tada does not disclose or suggest a

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substantially planar fiber mount region being formed directly on the substrate. Instead, the Tada patent discloses mounting an optical fiber using groove 2 and fixing the fiber to a predetermined position in the optical axis direction using the overhanging part 4 (Col. 7, lines 16-22). Thus, Tada does not include all of the features of claim 13.

Because neither Zairi et al., Tada nor their combination disclose all of features that claim 13, claim 13 is not subject to rejection under 35 U.S.C. 103(a) as being unpatentable over Zairi et al. in view of Tada. As claims 14 - 17 include all of the features of claim 13 from which they depend, claims 14 - 17 are also not subject to rejection under 35 U.S.C. 103(a) as being unpatentable over Zairi et al. in view of Tada.

Claims 21 - 23 were rejected under 35 U.S.C. 103(a) as being unpatentable over Zairi et al. in view of Tada and Doussiere et al. (U.S. Pat. No. 5,717,711). The ground for rejection of claim 21 is overcome for similar reasons to claim 13, as described above. Neither Zairi et al., Tada nor Doussiere et al. disclose or suggest "forming a substantially planar fiber mount region directly on a surface of the substrate" as required by claim 21.

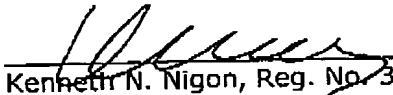
As described above, neither Zairi et al. nor Tada disclose forming a substantially planar fiber mount region directly on a surface of the substrate. Doussiere et al. disclose a fiber laser coupler. Doussiere et al. do not disclose nor suggest forming a fiber mount region on a surface of a the substrate. Instead, Doussiere et al. disclose a fiber mounted in a opening in the wall of the casing that encloses the optical device. (Fig. 3 and Col. 3, lines 54 - 60). Accordingly, Doussiere et al. do not provide the material that is missing from Zairi et al. and Tada. Consequently, claim 21 is not subject to rejection under 35 U.S.C. 103(a) as being unpatentable over Zairi et al. in view of Tada and Doussiere et al. Because claims 22 and 23 include all of the features of claim 21 from which they depend, claims 22 and 23 are also not subject to rejection under 35 U.S.C. 103(a) as being unpatentable over Zairi et al. in view of Tada and Doussiere et al.

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In view of the foregoing amendments and remarks, Applicant requests that the Examiner reconsider and withdraw the rejection of claim 2 and 7 - 26.

Respectfully submitted,


Kenneth N. Nigon, Reg. No. 31,549
Attorney for Applicant

KNN/drm/ap

Dated: June 1, 2006

<input checked="" type="checkbox"/> P.O. Box 980 Valley Forge, PA 19482 (610) 407-0700
<input type="checkbox"/> P.O. Box 1596 Wilmington, DE 19899 (302) 778-2500

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June 1, 2006

